

**THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of	
Inventors: Lawrence WILCOCK et al.	: Confirmation No. 3640
	:
U.S. Patent Application No. 10/058,045	: Group Art Unit: 2644
:	
Filed: January 29, 2002	: Examiner: Daniel R. SELLERS
:	
For: AUDIO USER INTERFACE WITH AUDIO CURSOR	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Attn: BOARD OF PATENT APPEALS AND INTERFERENCES

SUPPLEMENTAL BRIEF ON APPEAL

Further to the Appeal Brief filed August 16, 2006 and the Notice of Appeal filed June 16, 2006, in connection with the above-identified application on appeal, herewith is Appellant's Supplemental Brief on Appeal. The Commissioner was authorized on August 16, 2006 to charge Deposit Account No. 08-2025 in the amount of \$500 for the statutory fee.

To the extent necessary, Appellant hereby requests any required extension of time under 37 C.F.R. §1.136 and hereby authorizes the Commissioner to charge any required fees not otherwise provided for to Deposit Account No. 07-1337.

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I. Real Party in Interest

The real party in interest is Hewlett Packard Development Company, L.P., a Texas limited partnership.

II. Related Appeals and Interferences

There are no related appeals and/or interferences.

III. Status of Claims

No claims are allowed.

Claims 1-8 and 10-46 are pending.

Claim 9 is canceled.

Claims 1-3, 5, 6, 8, 13-15, 17, 19-25, 29-31, 33, 35-41, 45 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Slezak, USP 6,647,119, and Cragun, USP 5,461,399. Claims 4, 7, 11, 18, 27, 34 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Slezak and Cragun as applied to claim 2, and further in view of Balabanovic, USP 6,624,826. Claims 10, 26 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Slezak and Cragun as applied to claim 1 above, and further in view of McKiel, Jr., USP 5,374,924. Claims 12, 28 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Slezak and Cragun as applied to claim 1 above, and further in view of Rohen, USP 5,186,629. Claims 16 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Slezak and

Cragun as applied to claim 15 above, and further in view of a prior art publication, "Signal Processing, Acoustics, and Psychoacoustics for High Quality Desktop Audio" by Kyriakakis et al.

IV. Status of Amendments

The amendment after Final Rejection filed June 20, 2006 was entered.

V. Summary of Claimed Subject Matter

Independent claims 1, 21 and 37 are concerned with an audio user-interfacing method and apparatus in which items, such as service announcements, are represented in an audio field by corresponding synthesized sound sources 40 (Figs. 2-8, title of the application, page 4, lines 27-29, page 11, lines 21-24). The method is performed with an audio cursor, in the form of a synthesized sound source derived by sound effector 74. The sound source derived by effector 74 is moveable in the audio field under user control (as a result of input device 140 (Fig. 18) enabling the user to rotate/displace the cursor, (page 39, lines 29-31, lines 13-15, page 39, line 29-page 40, line 5, page 40, lines 17-23). A distinctive sound emanates from the cursor. The distinctive sound can be dots and dashes, for example (page 41, line 4). The cursor position is calculated by audio cursor position calculator 141 (page 40, lines 7-10) that supplies a signal to memory 144 of source parameter set/modify device 70 (page 41, line 12). The cursor, i.e., synthesized sound source, appears to be moved in the audio field (page 37, line 21, page 39, lines 29-31). Cursor sound setter 145 compares the positions of the cursor and sound sources 40 (page 40, lines 14-23, page 41, line 28-page 42, line 6). In response to the comparison made by sound setter 145 indicating

the cursor has been moved close to one of sources 40, the sound emitted by the sound source 40 and/or the cursor is modified (page 40, line 27, page 41, line 4, page 41, lines 8-17, page 42, lines 19-21, page 40, line 28-page 41, line 1 and page 42, lines 23-25). The modification can involve switching the sound source from a label for the service, i.e., identification of the service, to the entire message associated with service (page 41, line 23- page 42, line 3).

The rendering-position determining means of claim 21 for determining, for each item-representing sound source, an associated rendering position at which the sound source is to be synthesized to sound in the audio field of claim 21 reads on the structures of Figs. 1, 9, 10 and 18 including unit 13 having memory 14 for plural synthesized sound sources 40 (page 12, line 28 – page 13, line 3). Memory 14 derives an indication of the position of each source 40 and supplies the position indication to unit 23 that responds to user location input 23 and user input 24 (page 13, lines 11-15). The source position signal derived by unit 23 is supplied to source position memory 25, having an output that is combined in combiner 30 with the output of field orientation memory 29, in turn responsive to the output of field orientation modifier 26, in turn responsive to head tracker 33 and/or user input 28 (page 13, lines 5-15 – page 15, lines 7-15, page 15, lines 25-27).

The positions of sources 40 can be on the periphery of a circle (page 9, lines 18-20), the surface of a sphere (Figs. 2, 4, 5, page 9, lines 2-7) or the surface 50 of a cylinder, (Figs. 6-8, page 17, lines 23, 24, page 18, lines 25, 26), or be three dimensional (page 13, lines 15-17, page 17, lines 30, 31). The sources 40 on the

cylindrical surface can be selectively muted by cylinder filter 71, Fig. 9, (page 21, lines 18-24).

The cursor-control means of claim 21 reads on a memory for storing the rendering cursor position or cursor control input device 140 (page 39, line 29 – page 40, line 12).

The rendering means of claim 21, including audio output devices, for generating an audio field in which the item-representing and cursor sound representing sources are synthesized at their associated rendering positions reads on speakers, or a vehicle sound system, or headphones (page 9, lines 28-32, page 11, lines 4-7), in combination with spatialization processor 10 and sound effector 74 (page 10, lines 5-8, page 21, lines 13-16, page 40, lines 20-22). The cursor proximity means of claim 21 for comparing the current rendering position of the audio cursor with the rendering positions of the item-representing sound sources and for generating a related audible indication by modifying the sounds emanating from at least one of the item-representing sound source and the cursor sound source in response to the cursor being determined as being close to an item-representing sound source reads on cursor sound setter 145 (Fig. 18), sound effector 74, processor 10 and audio output devices 11 (page 40, line 14-page 41, line 17).

Claims 4 and 7 require the audible indication to be varied by changing a spoken element to indicate the distance between the item-representing sound source and the cursor. Page 41, line 5 indicates that appropriate words, such as "above", "below", "left", and "right", are supplied to audio output devices 11 so the user of devices 11 is

apprised of the position of item representing the sound source 40 relative to the cursor. The distance between the item representing sound source and the cursor can also be indicated audibly by words, such as "getting closer" and "farther" from the sound source 40 (page 41, lines 8-10).

The audible indication provided by audio output devices 11 can also include, as defined by claims 13, 29 and 45, a first non-varying element indicative of the general proximity of the cursor to sound source 40 and a second continuously variable element indicating the distance between the cursor and a second continuously variable element indicating the distance between the cursor and sound source 40 (page 43, lines 4-9). The cursor proximity means of claim 29 that performs the foregoing function is provided by sound setter unit 145 and sound effector 74 (page 40, lines 28-30, page 42, lines 9-12, page 43, lines 4-9)

Claim 15 indicates the audio field references are independently moveable relative to a presentation reference 44 (Figs 2-5) determined by a mounting configuration of the audio output devices 11 for synthesizing the sound sources 40 (page 9, line 29 – page 10, line 1). Such movement is performed by appropriate settings in memory 14 of unit 13, and in response to user location input 23, user input 24 and head-tracker 33, as well as inputs to cylinder filter 71 (page 9, lines 1-14, page 13, lines 5-18, page 13, line 25-page 14, line 30).

Claims 10, 26 and 42 indicate the audible indication is provided solely through modifying the sounds emanating from the cursor (page 42, lines 26 and 27). Claim 26 defines this limitation in means-plus-function language by requiring "said cursor-

proximity means is operative to provide said audible indication solely through modifying the sounds emanating from the cursor sound source." The structure for achieving this result is sound setter unit 145 and sound effector 74 (page 42, lines 9-14, and page 42, lines 26-27).

Claims 11, 27 and 40 indicate the audible indication includes a first component provided through modifying the sounds emanating from the item-representing sound source, and a second component provided through modifying the sounds emanating from the cursor (page 40, line 27), a function provided by sound setter 145. One of the components is required to be varied in correspondence with changes in the distance between the item-representing sound source 40 and the cursor derived by sound effector 74, while the other component is indicative of the direction of the item-representing sound source 40 from the cursor or the reverse of this direction (page 42, line 9-14; page 42, lines 23-30). Sound setter 145 performs this function. Claim 27 defines this limitation in means-plus-function language. Accordingly, this means-plus-function limitation of claim 27 is performed by sound setter 145 as described at page 40, line 27, and page 42, lines 9-14, and page 42, lines 23-30.

Claims 12, 28 and 44, indicate the audible indication is used to signal to a user in response to the item-representing sound source and the cursor being coincident, at least in terms of their direction from a user reference location (page 41, lines 19-20). The foregoing function is provided by sound setter 145. Claim 28 defines this limitation in means-plus-function language. Consequently, the structure of Appellant's specification corresponding with the means-plus-function limitations of claim 28 is sound setter 145 and sound effector 74, as described at page 41, lines 19-21.

Claim 16 indicates the cursor-associated audio field reference is stabilized relative to one of a user's body or a user's head, wherein the stabilization takes into account whether the audio output devices 11 that are used to synthesize the sound sources are world, body or head mounted, and, as appropriate, rotation of the head or body of the user (page 40, lines 1-5; page 10, lines 5-8; page 10, lines 13-35; page 15, lines 7-15, lines 25-29; page 16, lines 7-11). This function is provided by head-tracker sensor 33, Fig. 1, field orientation modifier 26, field orientation memory 29, combiner 30, memory 15 and spatialization processor 10.

Claims 17 and 33 require the cursor to be movable in a depth direction of the audio field towards and away from a user reference position, wherein the distinctive cursor sound is varied to provide the user with an indication of the current position of the cursor in the depth direction (page 43, lines 11-20). This function is performed by cursor-control input device 140 (Fig. 18), memory 144, cursor sound setter 145 and sound effector 74. This limitation is defined in means-plus-function language in claim 33. Hence, the structure of the specification that reads on the "means" of claim 33 is cursor-control input device 140, memory 144, cursor sound setter 145 and sound effector 74, as described at page 43, lines 11-20.

Claims 18, 34 and 43 require the cursor to be determined to be close to an item-representing sound source as a result of the cursor being within a threshold distance of the sound source, wherein the threshold distance is settable by the user (page 40, lines 28-31). The specification indicates cursor sound setter 145 performs this function. The function is defined in means-plus-function language in claim 34.

Hence, the structure of claim 34 reads on the cursor sound setter 145, as described at page 40, lines 28-31.

Dependent claim 31, formatted in means-plus-function language, requires the cursor-control means of claim 21 to include "means for setting the location of the cursor sound source relative to an audio-field reference." This function is performed by field orientation modifier block 26 (Fig. 1 or Fig. 10) in response to the output of cursor control input device 140 (Fig. 18) so the cursor sub-field is rotated/displaced (page 40, lines 1-5). Alternatively, it is performed by cursor control input device 140 and cursor position unit 141 (page 40, lines 7-12). Claim 31 also calls for user input means for controlling an offset between audio field reference 42 and a presentation reference 44 (Figs. 2-5, page 9, lines 10-14). The offset can be angular and/or axial (page 15, lines 7-15; page 17, line 32; page 18, line 1; page 18, lines 4, 5; page 20, lines 19-30). The presentation reference is arranged to be determined by the mounting configuration of audio output devices 11 (page 9, line 28-page 10, line 1). Claim 31 also requires means for deriving the rendering position of each sound source based on the location of the sound source in the audio field and the offset. Processor 10, described in connection with Fig. 1, performs this function in response to inputs indicative of sound source positions from memories 14 and 15, as described in connection with Fig. 1, at page 10, lines 25-29; page 16, lines 1-5; and page 16 lines 13-18.

Claim 32 requires the cursor-control means of claim 31 to further comprise stabilization means for varying the offset depending on the rotation of the head of the user or the body of the user. The offset takes into account whether the audio output

devices are body or head mounted, to stabilize the audio field reference 42 relative to either a user's body or a user's head. This limitation is disclosed in connection with Figs. 1 or 10, in combination with Fig. 18, and is performed by responding to head-tracker sensor 33, Fig. 1, that supplies an input to field orientation modifier 26, that supplies a signal to field orientation memory 29, having an output that is supplied to combiner 13 that drives memory 15. Memory 15 supplies the signal that controls offset to spatialization processor 10 (page 40, lines 1-5; page 10, lines 23-30; page 10, lines 5-8; page 10, lines 23-35; page 15, lines 7-15; page 15, lines 25-29; page 16, lines 7-11). The cursor sound source of Fig. 18 can be one of the sub-fields of Fig. 10 (page 22, lines 25-28; page 40, lines 5-7) or cursor input device 140 (Fig. 18) can directly set the cursor sound source position.

VI. Grounds of Rejection to be Reviewed on Appeal

- A.** The Examiner has failed to establish a prima facie case of obviousness, under 35 USC 103(a), for independent claims 1, 21 or 37 because he has failed to provide any reason why one of ordinary skill in the art would have modified the Fig. 9 arrangement of Slezak that has a moving synthesized sound cursor so it includes synthesized sound sources 198 disclosed in Fig. 6 of Slezak or one of signal sources 72-75 that drives speakers 86 and 87 of Cragun.
- B.** It was not obvious to one of ordinary skill in the art at the time of Appellant's invention, under 35 USC 103(a), to have modified the Fig. 9 arrangement of Slezak that has a moving synthesized sound cursor so it includes synthesized sound sources 198, as disclosed in Fig. 6 of Slezak, or one of audio signal sources 72-75 that drive speakers 86 and 87 of Cragun.
- C.** Cragun includes the limitation of claim 21 that is covered by 35 U.S.C. 112, paragraph 6, for rendering-position determining means for determining, for each item representing sound source, an associated rendering position at which the sound source is to be synthesized to sound in the audio field.
- D.** The examiner has not shown Slezak discloses the requirement of claim 21 that is covered by 35 U.S.C. 112, paragraph 6, for cursor-control means for determining, under user control, a current rendering position in the audio field of a cursor sound source and for providing a distinctive cursor sound for output from the cursor sound source.
- E.** The examiner has not shown Slezak discloses the requirement of claim 21, that is covered by 35 U.S.C. 112, paragraph 6, for rendering means, including audio output devices, for generating an audio field in which said item-representing and cursor sound sources are synthesized at their associated rendering positions.
- F.** The examiner has not shown Cragun discloses the requirement of claim 21, that is covered by 35 U.S.C. 112, paragraph 6, for cursor-proximity means for (a) comparing the current rendering position of the audio processor with the audio processor with the rendering positions of the item-representing sound sources, and (b) generating a related audible indication by modifying the sounds emanating from at least one of the item-representing sound source and the cursor sound source in response to the cursor being determined as being close to an item-representing sound source.

- G. Because Slezak and Cragun do not make the features of claims 13, 15, 17, 29, 33, and/or 45 obvious the rejection of claims 13, 15, 17, 29, 33, and/or 45 under 35 USC 103(a) is wrong.
- H. Because claims 29 and 33, both of which are dependent on claim 21 and include limitations covered by 35 U.S.C. 112, paragraph 6, include means plus function structure not disclosed by Slezak and Cragun the rejection of claims 29 and 33 under 35 USC 103(a) is incorrect.
- I. Because one of ordinary skill in the art would not have combined Slezak, Cragun and Balabanovic to meet the terms of claims 4, 7, 11, 34 and/or 43 the rejection of claims 4, 7, 11, 34 and/or 43 under 35 USC 103(a) is incorrect.
- J. Because one of ordinary skill in the art would not have combined Slezak, Cragun and McKiel, Jr. to meet the requirements of Claims 10, 26 and/or 42 the rejection of claims 10, 26 and/or 42 under 35 USC 103(a) is wrong.
- K. Because one of ordinary skill in the art would not have combined Slezak, Cragun and Rohen to meet the terms of Claims 12, 28 and/or 44 the rejection of claims 12, 28 and/or 44 under 35 USC 103(a) is incorrect.
- L. Claim 28 includes means plus function structure covered by 35 U.S.C. 112, paragraph 6, which the examiner has not shown is disclosed by Slezak, Cragun and Rohen.

VII. Argument

- A. The Examiner has failed to establish a prima facie case of obviousness, under 35 USC 103(a), for independent claims 1, 21 or 37 because he has failed to provide any reason why one of ordinary skill in the art would have modified the Fig. 9 arrangement of Slezak that has a moving synthesized sound cursor so it includes synthesized sound sources 198 disclosed in Fig. 6 of Slezak or signal sources 72-75 that drive speakers 86 and 87 of Cragun.

The rejection of claim 1 states:

Regarding claim 1, Slezak teaches an audio user-interfacing method, wherein a synthesized sound source, representing a cursor, is moved in the audio field (Col. 9, lines 26-48). Slezak teaches item-representing

sound sources (Col. 7, line 62 – Col. 8, line 17). However Slezak does not teach a cursor, wherein an audible indication is modified when the cursor comes close to an item-representing sound source. Cragun teaches that an audible indication is modified when a visual cursor comes close to an item-representing sound source, wherein the sound emanates from at least one of the item-representing sound source and the cursor (Col. 6, lines 14-17 and Col. 6, line 55 – Col. 7, line 24).

This rejection does not satisfy the burden of the Examiner to support a prima facie case of obviousness. The Examiner has the burden of going forward to establish a prima facie case of obviousness. In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); In re Linter, 458 F.2d 1013, 173 USPQ 560 (CCPA 1972); In re Saunders, 444 F.2d 599, 170 USPQ 213 (CCPA 1971); In re Tiffin, 443 F.2d 394, 170 USPQ 88 (CCPA 1971), *amended*, 448 F.2d 791, 171 USPQ 294 (CCPA 1971); In re Warner, 379 F.2d 1011, 154 USPQ 173 (CCPA 1967), *cert. denied*, 389 U.S. 1057 (1968).

To establish a prima facie case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference to combine the teachings of the references. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Since the Examiner has not provided any suggestion or motivation to combine the references or to modify Slezak, the primary reference, as a result of Cragun, the secondary reference, the Examiner has not established a prima facie case of obviousness with respect to claim 1.

Since the only rejection of independent claims 21 and 37 relies on the same rationale as set forth with respect to claim 1, with comments concerning features of

Slezak and Cragun, the rejections of claims 21 and 37 are improper. The comments about claims 21 and 37, in the final rejection also provide no rationale as to why Slezak would be modified as a result of Cragun or why the two references would be combined.

Since no attempt has been made to establish a prima facie case with respect to the combination of references, the rejections of claims 1, 21 and 37 are improper. Consequently, all the rejections are improper because no prima facie case of obviousness has been established with respect to any of the independent claims.

- B. It was not obvious to one of ordinary skill in the art at the time of Appellant's invention, under 35 USC 103(a), to have modified the Fig. 9 arrangement of Slezak that has a moving synthesized sound cursor so it includes synthesized sound sources 198, as disclosed in Fig. 6 of Slezak, or one of audio signal sources 72-75 that drive speakers 86 and 87 of Cragun.**

The Examiner relies on two separate portions of Slezak, i.e., col. 9, lines 26-48, that is concerned with Fig. 9, and col. 7, line 62 – col. 8, line 17, that is concerned with Figs. 6A and 6B. These two portions of Slezak are concerned with mutually exclusive features.

Fig. 9 is concerned with enabling a user to more easily locate a visual cursor on a screen of a computer display. A sound is generated at a position in space that corresponds somewhat with the position of the visual cursor. The sound enables a user of the display to more quickly determine where the visual cursor is located.

Figs. 6A and 6B are concerned with sub-elements 192 that can be hyper text mark-up language (HTML) pages. The HTML pages are rendered on monitor 160 when a user browses a site of information available through an intranet or the Internet. Simulated sound sources 198 correspond in position with the sub-elements 192. As a user navigates through sub-elements 192 to display each of the various sub-elements, simulated sound source 198 moves from one of the locations illustrated in Fig. 6B to the position of another of the sound sources 198.

Cragun is concerned with enabling visually impaired computer users to graphically select visually displayed objects. Each visually displayed object is located at a different position on a screen, as illustrated in Fig. 3. Each of objects 72-75 includes a first audible characteristic that is the same for each object of a particular class, and a second audible characteristic that is different for each object within a class; see Fig. 4 and column 8, lines 4-column 9, line 2. These audible characteristics are modified by volume controllers 76-79 and direction modifiers 80-83. The screen also includes a visual cursor that can be moved by the user. The cursor has no audible characteristics. As the distance between the visual cursor and each of objects 72-75 changes, the volume of the audible characteristics derived from sources 72-75 is varied. As the direction between the cursor and the object 72-75 changes, there are changes in the relative characteristics of the signals supplied by direction modifiers 80-83 to speakers 86 and 87. As a result, the visually sight impaired user has no idea where the cursor is, but only an indication of the position of the cursor relative to objects 72-75.

The separate disclosures in Slezak of Figs. 6 and 9 provide evidence of the unobviousness of Appellant's use of separate sound sources for the cursor and the item-representing sound sources. If it had been obvious to combine the features of Figs. 6 and 9 of Slezak in a single device, certainly some mention would have been made of doing that in the Slezak reference.

The Slezak patent is not at all concerned with an aid for the visually impaired. Consequently, one of ordinary skill in the art would not have modified Slezak as a result of the Cragun device for enabling visually impaired computer users to graphically select displayed objects. Cragun has the disadvantage of providing no information to the visually impaired user about the location of the cursor. Because Slezak uses the cursor position only to enable someone who has visual acuity to determine the location of the cursor, one of ordinary skill in the art would not have combined the references.

- C. Cragun does not include the limitation of claim 21 that is covered by 35 U.S.C. 112, paragraph 6, for rendering-position determining means for determining, under user control, a current rendering position in the audio field of a cursor sound source and for providing a distinctive cursor sound for output from the cursor sound source.**

Since the rendering-position determining means of claim 21 is formatted in means plus function language, the Examiner must show that Cragun has a rendering-position determining means that is the same as or the equivalent of the corresponding structure described in Appellant's specification. Appellant, in the Summary of Claimed Subject Matter portion of this Brief, pointed out the portions of the specification that

disclose the rendering-position determining means. The Examiner has failed to provide any analysis for any of the portions of applicants' specification, or equivalents thereof, to meet these requirements. Hence, the rejection of claim 21 is incorrect.

- D. Cragun does not disclose the requirement of claim 21, that is covered by 35 U.S.C. 112, paragraph 6, for cursor-control means for determining, under user control, a current rendering position in the audio field of a cursor sound source and for providing a distinctive cursor sound for output from the cursor sound source.**

Since the cursor-control means of claim 21 is formatted in means plus function language, the Examiner must show that Cragun has a cursor-control means that covers the corresponding structure described in Appellant's specification or equivalents thereof. Appellants, in Section V of this Brief, pointed out the portions of the specification that disclose the cursor-control means. The Examiner has failed to provide any analysis for any of the portions of applicants' specification, or equivalents thereof, to meet these requirements. Hence, the rejection of claim 21 is incorrect.

- E. Slezak does not disclose the requirement of claim 21, that is covered by 35 U.S.C. 112, paragraph 6, for rendering means, including audio output devices, for generating an audio field in which said item-representing and cursor sound sources are synthesized at their associated rendering positions.**

Since the rendering means of claim 21 is formatted in means plus function language, the Examiner must show that Slezak has a rendering means that covers the corresponding structure described in Appellant's specification or equivalents thereof. Appellants, in the Summary of Claimed Subject Matter portion of this Brief, pointed out

the portions of their specification that disclose the rendering means. The Examiner has failed to provide any analysis for any of the portions of Appellant's specification, or equivalents thereof, to meet these requirements. Hence, the rejection of claim 21 is incorrect.

- F. Cragun does not disclose the requirement of claim 21, that is covered by 35 U.S.C. 112, paragraph 6, for cursor-proximity means for (a) comparing the current rendering position of the audio cursor with the rendering positions of the item-representing sound sources, and (b) generating a related audible indication by modifying the sounds emanating from at least one of the item-representing sound source and the cursor sound source in response to the cursor being determined as being close to an item-representing sound source.**

Since the cursor-proximity means of claim 21 is formatted in means plus function language, the Examiner must show that Cragun has a cursor-proximity means that covers the corresponding structure described in Appellant's specification or equivalents thereof. Appellants, in Section V of this brief, pointed out the portions of the specification that disclose the cursor-proximity means. The Examiner has failed to provide any analysis for any of the portions of applicants' specification, or equivalents thereof, to meet these requirements. Hence, the rejection of claim 21 is incorrect.

- G. Because Slezak and Cragun do not make the features of claims 11, 27, 40, 13, 29, 45, 15, 17 and/or 33 obvious the rejection under 35 USC 103(a) of claims 11, 27, 40, 13, 29, 45, 15, 17 and/or 33 is wrong.**

To reject claims 13, 29 and 45 that require the audible indication that is derived by modifying, in a manner that is perceptible to a user, the sound emanating from the

item-representing sound source and/or the cursor, so there is at least a first, non-varying element indicative of the general proximity of the cursor to the item-representing sound source and a second, continuously variable element indicating the separation distance between the cursor and the item-representing sound source, the Examiner relies on Cragun, col. 9, lines 14-38, and col. 7, lines 19-24. Col. 7, lines 19-24 discloses volume control as a function of distance between the cursor (pointer 37) and an object. Col. 9, lines 14-38, discusses the nature of the first and second characteristics derived by signal sources 72-75, i.e., prior to the outputs of these signal sources being varied as a function of distance and direction between the objects represented by these signal sources and the cursor. Col. 9, lines 19-24 indicates the output of each signal source 72-75 is coupled to controllers 76-79 that are used to vary the volume of both audio signals generated by each of sources 72-75. Hence, the non-varying signals derived by sources 72-75 are not indicative of the general proximity of the cursor to an item representing sound source.

To reject claims 17 and 33, the Examiner alleges the combination of Slezak and Cragun teaches a three-dimensional sound field, wherein it is inherent that the audio cues account for elevation and depth. Claims 17 and 33 require the cursor to be moveable in a depth direction of the audio field in which items are represented by corresponding synthesized sound sources from where sounds related to the items appear to emanate.

The Examiner has failed to meet the requirements necessary for inherency. The fact that a certain result or characteristic may occur or be present in the prior art is

not sufficient to establish the inherency of that result or characteristic. In re Rijckaert, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993); In re Oelrich, 666 F.2d 578, 581-82, 212 U.S.P.Q. 323, 326 (C.C.P.A. 1981). To establish inherency, extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference and that it would be so recognized by persons of ordinary skill in the art. Inherency may not be established by possibilities or probabilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient. In re Roberston, 169 F.3d 743, 745, 49 U.S.P.Q.2d 1949, 1950-51 (Fed. Cir. 1999). In relying upon a theory of inherency, the Examiner must provide a basis in fact or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the prior art. Ex parte Levy, 17 U.S.P.Q.2d 1461, 1464 (B.P.A.I. 1990). Since the Examiner has not provided a rationale or evidence to show that the combination of Slezak and Cragun inherently meets the foregoing requirements of claims 17 and 33, the rejection of claims 17 and 33 is incorrect and must be withdrawn.

Furthermore, the Slezak cursor of Fig. 9 only moves in the plane of the display and there is no mention of depth in connection with the cursor of Fig. 9. Of course, there is no sound associated with the Cragun cursor, no less a derivation of a distinctive cursor sound that is varied to provide a user with an indication of the current position of the cursor in the depth direction.

- H. Because claims 27, 29 and 33, all of which are dependent on claim 21 and include limitations covered by 35 U.S.C. 112, paragraph 6, include means plus function limitations not disclosed by Slezak and Cragun the rejection of claims 27, 29 of 33 under 35 USC 103(a) is incorrect.**

Dependent claims 27, 29 and 33 are formatted in means plus function language and therefore are subject to be construed in accordance with 35 U.S.C. 112, paragraph 6. Consequently, it is incumbent upon the Examiner to show where Slezak and Cragun disclose the requirements of the portions of Appellant's specification that are concerned with these claims. Appellant, in the Summary of the Claimed Subject Matter portion of this Brief, has shown the basis in the specification for these limitations. The Examiner has made no attempt to show how the references applied against these claims can be construed to cover the corresponding structure in Appellant's specification and/or equivalents thereof.

- I. Because one of ordinary skill in the art would not have combined Slezak, Cragun and Balabanovic to meet the terms of claims 4, 7, 11 or 34 the rejection of claims 4, 7, 11 and/or 34 under 35 USC 103(a) is incorrect.**

To reject the requirement of claim 4 for an audible indication to be varied by changing a spoken element to indicate the distance between an item-representing sound source and a cursor, the Examiner relies on Balabanovic, col. 13, line 43 - col. 14, line 14, to disclose a browsing system wherein a three-dimensional audio space can be explored and wherein loudness is varied proportional to the distance from the sound source. The relied upon portion of Balabanovic is concerned with playing back

a three-dimensional multi-media narrative, wherein a user follows the path of an author of a work, in a simulated manner by following path 610. As the user navigates along the author's path and approaches cube 510, Fig. 6, the user hears an audio segment recorded by the author while the author was within proximity of indicator 710, Fig. 7. In one embodiment, the audio is not played until the user has navigated to within an area bounded by proximity indicator 710. In another embodiment, the loudness of the audio increases as the user approaches cube 510.

The three-dimensional multi-media playback arrangement of Balabanovic is so different from the disclosures in Slezak and Cragun that one of ordinary skill in the art would not have combined them. Neither Slezak nor Cragun is concerned with a multi-media narrative. Fig. 9 of Slezak is concerned with locating a cursor by using audio having a position that moves with the cursor, to enable the user of a display to more easily locate the cursor. This has nothing to do with playback of multi-media narrative. Cragun is concerned with an aid for the blind. A blind person would not be able to use the Balabanovic arrangement that requires a user to follow the author's path 610. The combination of references is clearly a result of hindsight and the Examiner casting about to find bits and pieces of Appellant's claims.

Claim 7 requires the audible indication to be varied by changing a spoken element to indicate the direction of the item-representing sound source from the cursor or the direction of the cursor from the item-representing sound source. The only comment in the final rejection concerning this claim is that the argument with respect to claim 4 is applicable. However, the argument with respect to claim 4 is not applicable because claim 4 has nothing to do with using an audio indication that is

varied by changing a spoken element to indicate the direction of a sound source relative to a cursor. Balabanovic only changes the intensity of recorded audio as a function of distance between the positions along the author's path and proximity indicator 710 or cube 510.

Claim 11 requires a component emanating from the item representing sound source or sounds emanating from the cursor to be varied in correspondence with changes in the distance between the item-representing sound source and the cursor. Such sounds are required to be indicative of the distance of the item-representing sound source from the cursor or the direction of the cursor from the item-representing sound source. In other words, claim 11 requires sounds from the two sound sources to be varied by differing factors, one being direction and the other being distance. Since there is no reference of record disclosing a single embodiment wherein the sound is derived from both the item representing sound source and the cursor, the features of claim 11 are not disclosed by the prior art. Further, the Examiner has not presented any rationale as to why one of ordinary skill in the art would have combined Slezak, Cragun and Balabanovic to arrive at the combination of claim 11. .

- J. Because one of ordinary skill in the art would not have combined Slezak, Cragun and McKiel, Jr. to meet the requirements of Claims 10, 26 and 42 the rejection of claims 10, 26 and 42 under 35 USC 103(a) is wrong.**

Claims 10, 26 and 42 require an audible indication that is modified in a manner that is perceptible to a user that occurs in response to the cursor being moved in the audio field produced by the synthesized sound sources. The audible indication is

derived solely from the cursor. Such a feature enables the message obtained from the synthesized sound sources related to the services to remain fixed. Hence, if the synthesized sound sources provide advertising information to a user, the user is not distracted from such a message. The Examiner admits that neither Slezak nor Cragun discloses modifying the audible indication of the cursor in the manner defined by claims 10, 26 and 42.

The Examiner relies on col. 4, lines 8-23, of McKiel, Jr. to disclose an audible indicator which modifies sounds emanating from a cursor. Col. 4, lines 8-23 of McKiel, Jr. is concerned with providing sound effects for enabling blind or visually impaired users to operate a computer system with a graphical user interface (col. 1, lines 12-15). As the user moves pointer 27 vertically, the pitch or frequency of a tone associated with pointer 27 varies to enable the user to count the number of steps between pointer 27 and the top or bottom of window 11. The user thereby is provided with an indication of how close pointer 27 is to the top or bottom of window 11.

The Examiner states that modifying his combination of Slezak and Cragun as a result of McKiel, Jr. would provide a better user experience by feedback of the global position of the cursor within the audio field, to allow users to find item-representing sound sources easier. In this regard, the Examiner relies on col. 2, lines 56-69, of McKiel, Jr. However, McKiel, Jr. does not disclose item-representing sound sources. There is nothing in col. 2, lines 56-69 of McKiel, Jr. stating anything about allowing users to find item-representing sound sources easier. Col. 2, lines 65-69 imply that the blind or visually impaired user of the system described by McKiel, Jr. is able to

navigate back to a desired object, after having found and identified all the objects in a window. This does not make the limitations of claims 10, 26 and 42 obvious.

K. Because one of ordinary skill in the art would not have combined Slezak, Cragun and Rohen to meet the terms of Claims 12, 28 and/or 44 the rejection of claims 12, 28 and/or 44 under 35 USC 103(a) is wrong.

To reject claims 12, 28 and 44 that require the audible indication that is generated by modifying, in a manner that is perceptible to a user, the sound emanating from at least one of the item-representing sound source and the cursor, as a result of the item-representing sound source and cursor being coincident, at least in terms of their direction from a user reference location, the Examiner relies on col. 3, lines 1-11, and col. 8, lines 19-29 of Rohen. The Final Rejection states "Rohen teaches an audible indicator when the a sound source and cursor are coincident (*sic.*)" The Examiner states it would have been obvious to combine Rohen with his proposed combination of Slezak and Cragun to provide accessibility to the handicapped.

Col. 3, lines 1-11 and col. 8, lines 19-29 of Rohen have nothing to do with a synthesized sound source from where sounds related to items appear and a sound emanating from a cursor. Col. 3, lines 1-11 indicates that in response to a tactile input (discussed at col. 2, lines 59-69), a user clicks a button on a mouse to cause a voiced annotation to be derived. The tactile input is derived in response to an object being located by movement of the mouse. Col. 8, lines 19-29, indicates that when a cursor encounters the edge of a window, an audio beep for a blind user is derived. Hence,

Rohen has no disclosure of an item-representing sound source and a cursor including a sound source being coincident. Further, one of ordinary skill in the art would not have combined Cragun and Rohen, both of which are concerned with visual graphics display arrangements for the blind or visually impaired, with Fig. 9 of Slezak, which is concerned with completely unrelated subject matter.

L. Claim 28 includes means plus function limitations covered by 35 U.S.C. 112, paragraph 6, that are not disclosed by Slezak, Cragun and Rohen.

Section V of this Brief indicates the structure of Appellant's specification that reads on the means plus function structure of claim 28. Because the office action fails to indicate where such structure or its equivalent is found in Slezak, Cragun and Rohen, the office action fails to establish a prime facie case of obviousness regarding claim 28.

VIII. Conclusion

The rejection of independent claims 1, 21 and 37 is improper because the Examiner has not attempted to establish a prima facie case of obviousness since he has provided no reason or motivation to combine the references. The features of claims 1, 21 and 37 are not obvious as a result of Slezak and Cragun because of the advantageous results obtained by deriving sounds from both the cursor and synthesized sound sources from where sounds related to items appear to emanate. There are many claims cast in means plus function language. The Examiner has made no attempt to indicate how the applied references conform with the specification or equivalents thereof, to satisfy the requirements of 35 U.S.C. 112, paragraph 6. Many of the dependent claims include other features that are not rendered obvious by the various combinations of references.

Reversal of the rejection is in order.

Respectfully submitted,

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IX. Claims Appendix

1. An audio user-interfacing method in which items are represented in an audio field by corresponding synthesized sound sources from where sounds related to the items appear to emanate, the method being performed with an audio cursor in the form of a synthesized sound source that is movable in the audio field under user control and from which a distinctive cursor sound emanates, the method including the steps of:

(a) moving the synthesized sound source in the audio field; and

(b) in response to the cursor being moved in the audio field so the cursor comes close to an item-representing sound source, generating a related audible indication by modifying, in a manner that is perceptible to a user, the sound emanating from at least one of the item-representing sound source and the cursor.

2. A method according to claim 1, wherein said audible indication is varied in correspondence with changes in the distance between said item-representing sound source and the cursor whereby to facilitate an appreciation by the user as to whether user-commanded cursor movement is moving the cursor closer to or further from the item-representing sound source.

3. A method according to claim 2, wherein said audible indication is varied by changing a continuously-variable audio characteristic in correspondence with changes in the distance between said item-representing sound source and the cursor.

4. A method according to claim 2, wherein said audible indication is varied by changing a spoken element to indicate the distance between said item-representing sound source and the cursor.

5. A method according to claim 1, wherein said audible indication is indicative of the direction of the said item-representing sound source from the cursor or the reverse of this direction.

6. A method according to claim 5, wherein said audible indication is varied by changing a continuously-variable audio characteristic to indicate the direction of the said item-representing sound source from the cursor or the reverse.

7. A method according to claim 5, wherein said audible indication is varied by changing a spoken element to indicate the direction of the said item-representing sound source from the cursor or the reverse.

8. A method according to claim 1, wherein said audible indication is varied in correspondence with changes in the distance between said item-representing sound source and the cursor whereby to facilitate an appreciation by the user as to whether user-commanded cursor movement is moving the cursor closer to or further from the item-representing sound source; said audible indication also being such as to indicate the direction of the said item-representing sound source from the cursor or the reverse of this direction.

10. A method according to claim 1, wherein said audible indication is provided solely through modifying the sounds emanating from the cursor.

11. A method according to claim 8, wherein the audible indication comprises a first component provided through modifying the sounds emanating from the item-representing sound source, and a second component provided through modifying the sounds emanating from the cursor; one said component being varied in correspondence with changes in the distance between the item-representing sound source and the cursor, and the other said component being indicative of the direction of the said item-representing sound source from the cursor or the reverse of this direction.

12. A method according to claim 1, wherein the said audible indication is used to signal to the user in response to the said item-representing sound source and cursor being coincident, at least in terms of their direction from a user reference location.

13. A method according to claim 1, wherein the audible indication comprises at least a first, non-varying, element indicative of the general proximity of the cursor to a said item-representing sound source, and a second, continuously variable, element indicating the separation distance between the cursor and the item-representing sound source.

14. A method according to claim 1, wherein the audio cursor is moved in the audio field by directly changing, through user input, the rendering position of the cursor in the audio field.

15. A method according to claim 1, wherein the item-representing sound sources are arranged in one or more groups with the or each group being associated with a respective audio-field reference relative to which the sound sources of the group are positioned, the cursor sound source being associated with a further audio-field reference; the audio-field references being independently movable relative to a presentation reference determined by a mounting configuration of audio output devices used to synthesise said sound sources; movement of the cursor in the audio field being effected by user-controlled movement of the cursor-associated audio-field reference relative to the presentation reference.

16. A method according to claim 15, wherein the cursor-associated audio field reference is

stabilised relative to one of:

- a user's body;
- a user's head;

this stabilisation taking account of whether audio output devices used to synthesise the sound sources are world, body or head mounted, and, as appropriate, rotation of the user's head or body.

17. A method according to claim 1, wherein the cursor is movable in a depth direction of the audio field towards and away from a user reference position, the said distinctive cursor sound being varied to provide the user with an indication of the current position of the cursor in said depth direction.

18. A method according to claim 1, wherein in step (b) the cursor is determined to be close to an item-representing sound source as a result of the cursor being within a threshold distance of the latter, this threshold distance being settable by the user.

19. A method according to claim 1, including the further step of selecting an item by aligning the audio cursor with the corresponding item-representing sound source and providing a selection command input.

20. A method according to claim 19, wherein at least some of the said items represented by the sound sources are audio labels for services, the method further including selecting a service by selecting the corresponding audio-label item using the audio cursor.

21. Apparatus for providing an audio user interface in which items are represented in an audio field by corresponding synthesized sound sources from where sounds related to the items appear to emanate, the apparatus comprising:

- rendering-position determining means for determining, for each item-representing sound source, an associated rendering position at which the sound source is to be synthesized to sound in the audio field;

- cursor-control means for determining, under user control, a current rendering position in the audio field of a cursor sound source and for providing a distinctive cursor sound for output from the cursor sound source;
- rendering means, including audio output devices, for generating an audio field in which said item-representing and cursor sound sources are synthesized at their associated rendering positions; and
- cursor-proximity means for (a) comparing the current rendering position of the audio cursor with the rendering positions of the item-representing sound sources, and (b) generating a related audible indication by modifying the sounds emanating from at least one of that item-representing sound source and the cursor sound source in response to the cursor being determined as being close to an item-representing sound source.

22. Apparatus according to claim 21, wherein said cursor-proximity means is operative to vary said audible indication in correspondence with changes in the distance between said item-representing sound source and the cursor whereby to facilitate an appreciation by the user as to whether user-commanded cursor movement is moving the cursor closer to or further from the item-representing sound source.

23. Apparatus according to claim 21, wherein said cursor-proximity means is operative to control said audible indication to indicate the direction of the said item-representing sound source from the cursor or the reverse of this direction.

24. Apparatus according to claim 21, wherein said cursor-proximity means is operative to vary said audible indication in correspondence with changes in the distance between said item-representing sound source and the cursor, the cursor-proximity means being further operative to control said audible indication to indicate the direction of the said item-representing sound source from the cursor or the reverse of this direction.

25. Apparatus according to claim 21, wherein said cursor-proximity means is operative to provide said audible indication solely through modifying the sounds emanating from the item-representing sound source.

26. Apparatus according to claim 21, wherein said cursor-proximity means is operative to provide said audible indication solely through modifying the sounds emanating from the cursor sound source.

27. Apparatus according to claim 24, wherein said cursor-proximity means is operative to provide said audible indication in the form of a first component provided through modifying the sounds emanating from the item-representing sound source, and a second component provided through modifying the sounds emanating from the cursor sound source; said cursor-proximity means being operative for (a) varying one said component in correspondence with changes in the distance between the item-representing sound source and the cursor, and (b) controlling the other said component to be indicative of the direction of the said item-representing sound source from the cursor or the reverse of this direction.

28. Apparatus according to claim 21, wherein said cursor-proximity means is operative to control the said audible indication to signal to the user in response to the said item-representing sound source and cursor being coincident, at least in terms of their direction from a user reference location.

29. Apparatus according to claim 21, wherein said cursor-proximity means is operative to form the said audible indication with at least a first, non-varying, element indicative of the general proximity of the cursor to a said item-representing sound source, and a second, continuously variable, element indicating the separation distance between the cursor and the item-representing sound source.

30. Apparatus according to claim 21, wherein the cursor-control means includes user-operable input means arranged to directly change the rendering position of the cursor sound source in the audio field.

31. Apparatus according to claim 21, wherein the cursor-control means comprises:

- means for setting the location of the cursor sound source relative to an audio-field reference;
- user input means for controlling an offset between the audio-field reference and a presentation reference, the presentation reference being arranged to be determined by a mounting configuration of the audio output devices; and

- means for deriving the rendering position of each sound source based on the location of the sound source in the audio field and said offset.

32. Apparatus according to claim 31, wherein the cursor-control means further comprises stabilisation means for varying the said offset in dependence on rotation of the user's head or body and taking account of whether said audio output devices are world, body or head mounted, such as to stabilise said audio field reference relative to one of:

- a user's body;
- a user's head.

33. Apparatus according to claim 21, wherein the cursor-control means is operative to enable the cursor to be moved under user control in a depth direction of the audio field towards and away from a user reference position, the cursor-control means being further operative to vary said distinctive cursor sound to provide the user with an indication of the current position of the cursor in said depth direction.

34. Apparatus according to claim 21, wherein the cursor-proximity means is operative to determine the cursor as being close to an item-representing sound source in response to the cursor being within a threshold distance of the latter, the apparatus including user-operable means for setting this threshold distance.

35. Apparatus according to claim 21, further comprising selection means for selecting an item by providing a selection command input after the audio cursor has been aligned with the corresponding item-representing sound source using the cursor-control means.

36. Apparatus according to claim 35, wherein at least some of the said items represented by the sound sources include audio labels for services.

37. Apparatus for providing an audio user interface in which items are represented in an audio field by corresponding synthesized sound sources from where sounds related to the items appear to emanate, the apparatus comprising:

- a rendering-position determining arrangement operative to determine, for each item-representing sound source, an associated rendering position at which the sound source is to be synthesized to sound in the audio field;
- a cursor-control arrangement operative to determine, under user control, a current rendering position in the audio field of a cursor sound source and to provide a distinctive cursor sound for output from the cursor sound source;
- a rendering subsystem, including audio output devices, arranged to generate an audio field in which said item-representing and cursor sound sources are synthesized at their associated rendering positions; and

- a cursor-proximity arrangement operative to generate a related audible indication by modifying, in a manner that is perceptible to a user, the sounds emanating from at least one of the item-representing sound source and the cursor sound source in response to the cursor being determined as close to an item-representing sound source.

38. Apparatus according to claim 37, wherein said cursor-proximity arrangement is operative to vary said audible indication in correspondence with changes in the distance between said item-representing sound source and the cursor whereby to facilitate an appreciation by the user as to whether user-commanded cursor movement is moving the cursor closer to or further from the item-representing sound source.

39. Apparatus according to claim 37, wherein said cursor-proximity arrangement is operative to control said audible indication to indicate the direction of the said item-representing sound source from the cursor or the reverse of this direction.

40. Apparatus according to claim 37, wherein said cursor-proximity arrangement is operative to vary said audible indication in correspondence with changes in the distance between said item-representing sound source and the cursor, the cursor-proximity arrangement being further operative to control said audible indication to indicate the direction of the said item-representing sound source from the cursor or the reverse of this direction.

41. Apparatus according to claim 37, wherein said cursor-proximity arrangement is operative to provide said audible indication solely through modifying the sounds emanating from the item-representing sound source.

42. Apparatus according to claim 37, wherein said cursor-proximity arrangement is operative to provide said audible indication solely through modifying the sounds emanating from the cursor sound source.

43. Apparatus according to claim 40, wherein said cursor-proximity arrangement is operative to provide said audible indication in the form of a first component provided through modifying the sounds emanating from the item-representing sound source, and a second component provided through modifying the sounds emanating from the cursor sound source; said cursor-proximity arrangement is operative to (a) vary one said component in correspondence with changes in the distance between the item-representing sound source and the cursor, and (b) control the other said component to be indicative of the direction of the said item-representing sound source from the cursor or the reverse of this direction.

44. Apparatus according to claim 37, wherein said cursor-proximity arrangement is operative to control the said audible indication to signal to the user in response to the said item-representing sound source and cursor being coincident, at least in terms of their direction from a user reference location.

45. Apparatus according to claim 37, wherein said cursor-proximity arrangement is operative to form the said audible indication with at least a first, non-varying, element indicative of the general proximity of the cursor to a said item-representing sound source, and a second, continuously variable, element indicating the separation distance between the cursor and the item-representing sound source.

46. Apparatus according to claim 37, wherein the cursor-control arrangement includes user-operable input device arranged to directly change the rendering position of the cursor sound source in the audio field.

X. Evidence Appendix

None.

Serial No. 10/058,045

XI. Related Proceedings Appendix

None.